

## THE RELATIONSHIP BETWEEN FAMILY INCOME AND THE NUTRITIONAL STATUS OF PREGNANT MOTHERS AT AMPEL 1 PRIMARY HEALTH CARE CENTER IN BOYOLALI REGENCY

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### Abstract

*Pregnancy represents a significant phase in the lives of women, particularly for those who are married. Thus, pregnancy necessitates specialized attention, especially concerning the fulfillment of energy and nutritional requirements. The quality of maternal dietary intake before and during pregnancy has the potential to influence the health of both the mother and her baby. Malnutrition during pregnancy can lead to various complications, affecting both the mother and the fetus, including issues like anemia, bleeding, and inadequate maternal weight gain. Maternal nutritional intake is influenced by a multitude of internal and external factors within the pregnant mother and her family, encompassing factors such as low levels of knowledge, social dynamics, and household income. This study aims to explore the correlation between the nutritional status of pregnant women and the family income level at the Ampel Health Center in Boyolali Regency. The research employs a quantitative approach utilizing an analytical survey method with a cross-sectional design. The study involved a sample size of 30 pregnant women. The results reveal that the majority of participants are aged between 20-35 years, predominantly in the second trimester of pregnancy, with 10 respondents (33.3%) in trimester II and 20 respondents (66.6%) in trimester III. The Spearman's rank correlation test yielded a p-value of 0.353, which is above the significance level of 0.05 ( $0.353 > 0.05$ ). Nonetheless, there is no significant correlation between the nutritional status of pregnant women and the family income level at the Ampel Health Center in Boyolali Regency.*

**Keywords:** Family Income, Nutritional Status, Pregnancy

### 1. INTRODUCTION

Pregnancy is a crucial phase in a woman's life, especially for those who are married. Thus, pregnancy demands specific attention, particularly in terms of meeting energy and nutritional needs. The quality of maternal dietary intake before and during pregnancy significantly impacts both the mother's and the baby's health. Additionally, proper nutrition and adequate nourishment during pregnancy also influence fetal growth, development, and cognitive function. Therefore, pregnant women must receive proper nutritional intake, which includes adhering to the "four healthy, five perfect" diet guidelines (Fitriahadi, 2017).

For women experiencing pregnancy, the requirements for vitamins and minerals differ from those during normal or pre-pregnancy periods. Nutritional needs during pregnancy become higher due to the physiological changes occurring in a woman's body. Physiological changes during pregnancy include increased plasma volume, augmented

food reserves, enhanced blood circulation, increased fetal weight, and the presence of amniotic fluid and placenta, all of which contribute to the overall weight gain of pregnant women during this period. On average, a pregnant woman's weight will increase by around  $\pm 12.5$  kg (Helmizar, 2019).

In Indonesia, data reveals that the prevalence of Chronic Energy Deficiency (KEK) among pregnant women is 21.6%. Moreover, the infant mortality rate in Indonesia was 32 per 1,000 live births in 2012. Out of these numbers, 19 per 1,000 infant deaths occurred during the neonatal period, from birth to 28 days old. The National Population and Family Planning Board (BKKBN) reported that over 400,000 pregnancies were unplanned during the Covid-19 pandemic. This increase is projected to result in a rapid rise in birth rates in 2021, with an estimated 420,000 babies expected to be born.

Malnutrition during pregnancy leads to various issues, affecting both the mother and the fetus. These issues encompass anemia, bleeding, inadequate maternal weight gain, and complications during childbirth, including difficult labor and prolonged postpartum bleeding. Malnutrition can also influence fetal growth, leading to miscarriages, birth defects, and low birth weight. Malnutrition continues to be a significant problem, especially in third-world countries like Indonesia, with pregnant women, infants, and toddlers being the most vulnerable groups. Chronic energy deficiency in pregnant women poses risks of sudden maternal death during the perinatal period or the birth of low-birth-weight infants. In such situations, maternal deaths due to bleeding increase, consequently elevating the maternal and infant mortality rates (Nurapriyanti & Sarwinanti, 2016).

Maternal nutritional intake is influenced by various internal and external factors within both the pregnant woman and her family, including low levels of knowledge, social factors, and household income. Household income is a pivotal factor affecting the quantity and quality of food consumption. Higher income provides greater opportunities for selecting a more diverse range of foods. Family income plays a significant role in determining an individual's health status, particularly for pregnant women, as it correlates directly with the family's purchasing power. A family's ability to purchase food depends on the magnitude of their monthly income. The higher the income, the greater the food expenditure (Mary E, 2018).

Based on preliminary survey results conducted among several pregnant women in the Ampel Health Center's jurisdiction, it was found that 2 out of 5 pregnant women experienced Chronic Energy Deficiency (KEK), while 3 out of 5 pregnant women exhibited normal nutritional status. The prevalence of KEK in the Ampel Health Center area is relatively high, reaching 0.78%. Additional data that serves as a reference in this study indicates that the majority of respondents work in the agricultural sector (21.94%), with 0.7% in the industrial sector, while others are distributed across trade and private sectors. Hence, this research aims to explore the relationship between the nutritional status of pregnant women and their family's income level at the Ampel Health Center in Boyolali Regency.

## **2. THEORETICAL BASIS**

### **2.1. According Family Income**

Income is the earnings generated by an individual from their work within a specified period to meet their own or family's needs (Madina 2019). Income is the total earnings obtained by an individual or a community based on their performance while working within a certain timeframe, whether on a daily, monthly, or even yearly basis. Family income refers to the combined earnings of all family members, which is used to fulfill the needs of all family members collectively or individually.

### **2.2. Maternal Nutritional Status**

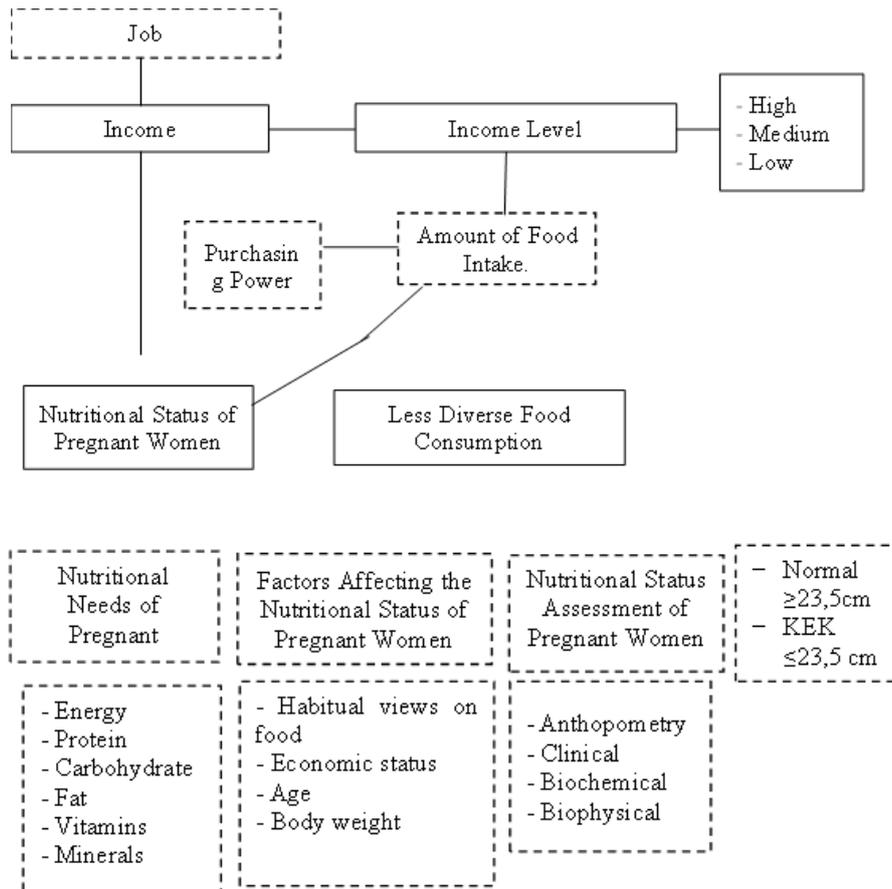
Nutrition and nourishment during pregnancy are essential factors that must be taken into consideration and met throughout the duration of pregnancy. Proper nutrition and nourishment during pregnancy are crucial to ensure the health of both the mother and the fetus. Nutritional status is a health indicator obtained from the balance between the nutrients consumed during pregnancy. Maternal nutrition involves consuming a healthy and balanced diet, which is mandatory during pregnancy (Dewi et al., 2021).

Nutritional requirements during pregnancy increase by more than 15% compared to women who are not pregnant. This increased nutritional intake is necessary for the growth of the uterus, breasts, blood volume, placenta, amniotic fluid, and the growing fetus itself. The food consumed by pregnant women is utilized for fetal growth by 40%, with the remaining 60% serving the mother's needs.

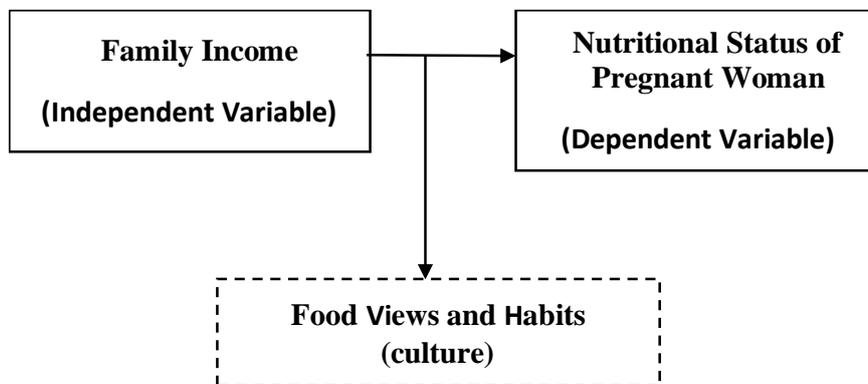
### **2.3. Relationship between Family Income and Maternal Nutritional Status**

Maternal nutritional intake is influenced by various internal and external factors within both the pregnant woman and her family, including low levels of knowledge, social factors, and the mother's income. Maternal income is an essential factor affecting the quantity and quality of food consumption. Higher income provides a greater opportunity for selecting better quality and more varied foods. Family income plays a significant role in determining an individual's health status, especially for pregnant women, as it correlates directly with the family's purchasing power. A family's ability to purchase food depends on the magnitude of their monthly income. The higher the income, the greater the amount spent.

Income is the most critical factor influencing the quality of the menu, as individuals cannot consume foods that they cannot afford to buy. Insufficient income leads to lower purchasing power, resulting in the inability to buy the necessary amount of food. This situation is hazardous for family health and can ultimately have negative effects on the nutritional status of pregnant women, where socioeconomic status supports the fulfillment of nutritional needs. Socioeconomic status determines the type of diet that will be consumed. This pertains to meeting the nutritional needs within the family, especially the consumption of foods with sufficient nutrients. Therefore, socioeconomic status is the most crucial factor determining the quality and quantity of food (Umar, 2021).



**Figure 1. Theoretical Framework**



**Figure 2. Conceptual Framework**

Hypothesis:

Alternative Hypothesis (Ha): There is no relationship between family income and the nutritional status of pregnant women.

Null hypothesis (H0): There is a relationship between family income and the nutritional status of pregnant women.

### **3. RESEARCH METHOD**

#### **3.1. Types and Research Design**

This study is quantitative research with an analytical survey method using a cross-sectional design. Analytical survey is a study or research that attempts to explore how and why a health phenomenon occurs. Meanwhile, cross-sectional design is a research method used to study the correlation dynamics between risk and effect factors, where independent and dependent variables are observed simultaneously at the same point in time.

#### **3.2. Research Subjects**

The target population in this study consists of all pregnant women, totaling 30 individuals. The accessible population in this study includes 30 pregnant women in the second and third trimesters. Period (April-May).

A sample is a subset of the population with certain characteristics (Kasira, 2008). The sample in this study consists of pregnant women at Ampel Health Center who meet the inclusion and exclusion criteria.

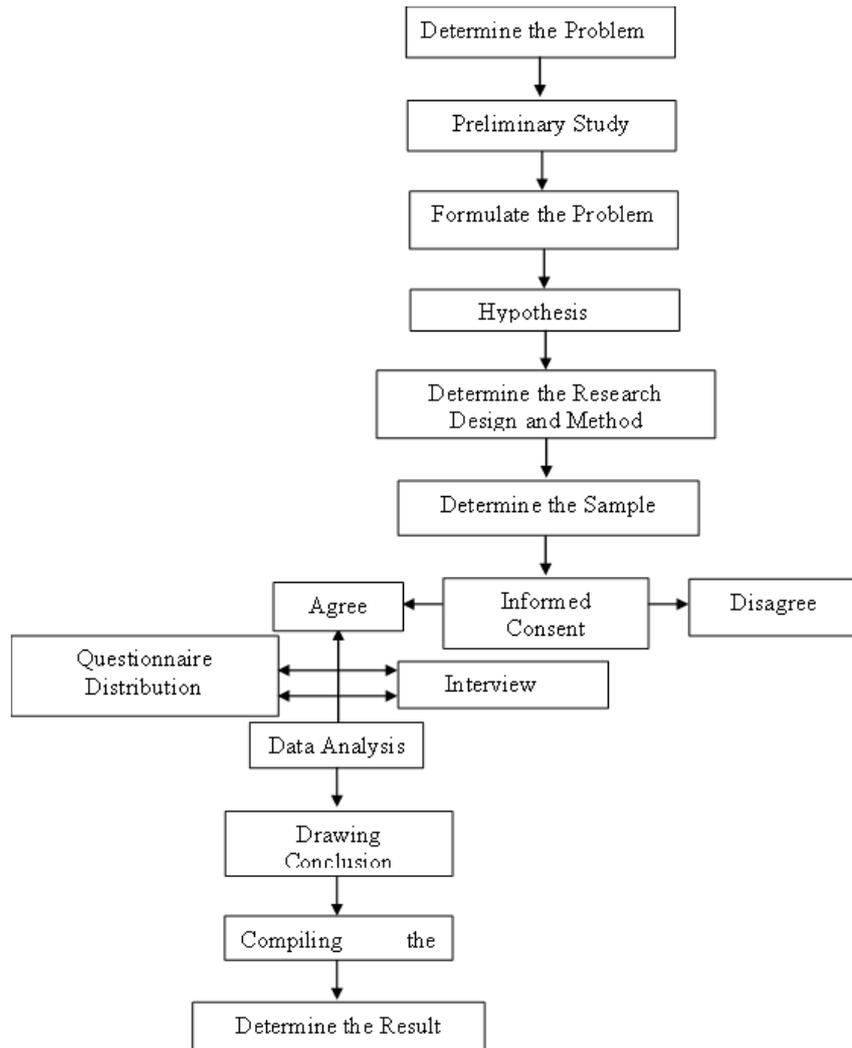
Inclusion Criteria:

- a. Willing to participate as respondents
- b. Physically and mentally healthy
- c. Pregnant women whose spouses work or earn an income
- d. Pregnant women in the second and third trimesters

While exclusion Criteria are pregnant women who have incomplete questionnaire responses

#### **3.3. Sampling Technique**

The sampling technique used in this research is total sampling, where the number of samples equals the population size. Total sampling is chosen due to the population size being less than 100. Therefore, the sample size in this study is 30 individuals.



**Figure 3. Activity Procedure**

The variables in this study are:

- a. Variable X (Variable Independent) is the nutritional status of pregnant women
- b. Variable Y (Dependent Variable) is family income
- c. Confounding variable is the view of food

**Table 1. Operational Variable**

No	Variable	Operational Definition	Measurement Tool	Measurement Result	Scale
1	Independent variable: nutritional status of pregnant women	A measurement that can be taken by women of childbearing age and pregnant women to provide an overview of the	Nutritional measurement of pregnant women using Anthopometry and Lila measurement	Good nutrition, LILA $\geq 23,5$ Less nutrition, LILA $< 23,5$ cm	Ordinal

		muscle tissue and fat layer under the skin. LILA reflects energy stores so this measurement can reflect SEZ in pregnant women.	
2	Dependent variable: family income	total family income (husband and wife) per month	Questionnaire
			High >Rp. 2.155.712 Medium=Rp. 2.155.712 Low<Rp. 2.155.712 (UMR Boyolali)
			Ordinal

### 3.4. Data Collection Method

Data for this research was collected from two main sources: primary data obtained directly from respondents through observations and questionnaire responses, and secondary data obtained indirectly from healthcare professionals at Puskesmas Ampel. Primary data includes patient identities, income levels, and Upper Arm Circumference (UAC) measurements, which will undergo further analysis. Data collection techniques involve administering questionnaires and conducting observations. To assess the nutritional status of pregnant women, Upper Arm Circumference (UAC) measurements were taken using a measuring tape. The collected data will go through various data processing stages, including editing, coding, scoring, and tabulation. Data analysis encompasses both univariate and bivariate analyses, employing the Spearman Rho correlation test. This research was conducted between April and May 2023 at Puskesmas Ampel 1, Boyolali Regency.

## 4. RESULT AND DISCUSSION

### 4.1. Overview of the Research Process

This study aims to determine the relationship between the nutritional status of pregnant women and the family income level at Ampel Health Center (Puskesmas), Boyolali Regency. The total number of respondents was 30 pregnant women who met the inclusion and exclusion criteria. The research process began with obtaining permission from the Boyolali Health Department on November 14, 2022. After receiving permission, data collection was conducted at Puskesmas Ampel, Boyolali Regency. With approval from the Puskesmas, the research was carried out over two days on April 12-13, 2023, involving antenatal care activities at the Integrated Health Services (PKD) and house-to-house visits on April 13. During the visits, questionnaires were filled out and Upper Arm Circumference (LILA) measurements were taken, accompanied by village midwives. The collected data from the questionnaires were then processed using SPSS. This study has

obtained Ethical Clearance (EC) with approval number 172/V/2023 from the Biomedical Commission.

## **4.2. Research Results**

### **4.2.1. Respondent Characteristics**

**Table 2. Frequency Distribution of Maternal Age at Ampel Health Center (Puskesmas), Boyolali Regency**

Age (year)	Percentage	
	F	%
<20	1	3.3
20-35	27	90.0
>35	2	6.7
Total	30	100.0

Based on Table 2, it can be observed that in terms of age, the majority of respondents are aged between 20-35 years, totaling 27 respondents (90.0%). Meanwhile, in the age category <20 years, there is 1 respondent (3.3%), and in the age category >35 years, there are 2 respondents (6.7%).

### **4.2.2. Trimester Frequency**

**Table 3. Frequency Distribution of Trimesters of Pregnant Women at Ampel Health Center (Puskesmas), Boyolali Regency**

Trimester	Percentage	
	F	%
Trimester 2	10	33.3
Trimester 3	20	66.7
Total	30	100.0

Based on Table 3, it can be observed that the trimester distribution of pregnant women at Ampel Health Center (Puskesmas), Boyolali Regency, shows that 10 respondents (33.3%) are in the 2nd trimester and 20 respondents (66.6%) are in the 3rd trimester.

#### 4.2.3. Frequency of Maternal Income

**Table 4. Frequency Distribution of Maternal Family Income at Ampel Health Center (Puskesmas), Boyolali Regency**

Income	Percentage	
	f	%
High	4	13.3
Medium	5	16.7
Low	21	70.0
Total	30	100.0

Based on Table 4, it can be understood that the family income of pregnant women at Puskesmas Ampel shows that 4 respondents (13.1%) have income above the minimum wage of Boyolali, 5 respondents (16.7%) have income equivalent to the minimum wage of Boyolali, while 21 respondents (70.0%) have income below the minimum wage of Boyolali.

#### 4.2.4. Relationship Between Maternal Nutritional Status and Family Income Level at Ampel Health Center (Puskesmas), Boyolali Regency

**Table 5. Relationship Between Maternal Nutritional Status and Family Income Level at Ampel Health Center (Puskesmas), Boyolali Regency**

##### Nutritional Status of Pregnant Women

		Good	Less	Total	p value	RR value
Income	High	3	1	4		
	Medium	4	1	5		
	Low	19	2	21		
Total		26	4	30		

The results of the Spearman correlation test showed a p-value of 0.353, which is greater than 0.05 ( $0.353 > 0.05$ ), indicating that there is no significant relationship between maternal nutritional status and family income. The significance value (sig) indicates that the correlation between maternal nutritional status and family income level is not meaningful. Additionally, the correlation coefficient obtained is -0.176, which can be interpreted as a very weak negative correlation between maternal nutritional status and family income level. This implies that the relationship between these variables is in the opposite direction; as one variable's value increases, the value of the other variable decreases. Therefore, it can be concluded that as family income improves for pregnant women, maternal nutritional status tends to decrease.

### **4.3. Discussion**

#### **4.3.1. Overview of Maternal Age**

This study reveals the age distribution of pregnant women in Ampel Health Center (Puskesmas), Boyolali Regency. In terms of age, the majority of respondents were aged 20-35 years, accounting for 27 respondents (90.0%). Meanwhile, in the age category <20 years, there were 1 respondent (3.3%), and in the age category <35 years, there were 2 respondents (6.7%). Biologically, it is recommended for women to become pregnant during their fertile age (20-35 years) as this age range provides more energy for pregnant women. This vulnerable age is considered mature enough for pregnancy, minimizing the competition for nutritional needs between the mother and the baby. Additionally, mentally, women are seen as prepared and mature for pregnancy. Maternal age that is too young or too old can impact fetal quality; hence, the optimal maternal age for pregnancy is between 20 and 35 years. This age range is ideal for achieving better maternal nutritional status during pregnancy (Manuba, 2015). After the first menstruation, a girl goes through a maturity process until the age of 18. Teenagers tend to have insufficient weight gain during pregnancy. Moreover, teenagers are less prepared for pregnancy. Consequently, the ideal maternal age for good pregnancy outcomes is between 20 and 35 years (Soetardjo et al., 2011).

#### **4.3.2. Overview of Trimesters of Pregnancy**

Pregnancy duration is divided into three trimesters. The majority of respondents in this study were in the second trimester, with 10 respondents (33.3%), while 20 respondents (66.6%) were in the third trimester. During trimesters II and III, the energy and protein needs increase due to pregnancy (Lubis, 2016). This makes occurrences of Chronic Energy Deficiency (CED) more evident during these trimesters. Pregnant women need 1000 mg of iron during pregnancy. The high iron requirement continues to increase, especially in trimesters II and III, amounting to around 3.5 mg as trimester II nears its end and 7 mg during trimester III. Statistical analysis did not show a correlation between pregnancy trimesters and the occurrence of CED. This is because if pregnant women in these trimesters consume sufficient protein, CED is unlikely. On the other hand, if pregnant women don't consume enough protein, the risk of CED increases. During trimesters II and III, pregnant women experience an increased appetite, and fetal growth accelerates, making this period ideal for maternal nutrition supplementation (Ansor, 2010).

#### **4.3.3. Overview of Maternal Income**

The study results indicate that 4 respondents (13.1%) had income above the minimum regional wage (UMR) in Boyolali, and 5 respondents (16.7%) had income equivalent to UMR, while 21 respondents (70.0%) had income below UMR. The income categories were determined based on the Decree of the Governor of Central Java No. 561/54 in 2022 regarding the minimum wages in districts/cities of Central Java province in 2023. Family income is a determining factor in the quality and quantity of food available in the family. Insufficient family income significantly affects maternal conditions, leading to CED due to its impact on the quality and quantity of food consumed by pregnant women. Adequate maternal nutritional status positively affects fetal growth. Good maternal nutrition leads to the birth of normal, healthy babies less prone to illnesses

compared to mothers with lower socioeconomic statuses, which could result in giving birth to babies with low birth weight (Asiyah, 2010).

#### **4.3.4. Relationship between Maternal Nutritional Status and Family Income Level**

The study results indicate that the analysis using Spearman's rank correlation produced a p-value of 0.353, which is greater than 0.05 ( $0.353 > 0.05$ ). Consequently, it can be concluded that there is no significant relationship between maternal nutritional status and family income level at Puskesmas Ampel, Boyolali. Among the 30 respondents with high income and good nutritional status, 3 respondents had high income, 1 respondent had moderate income with low nutritional status, 4 respondents had moderate income with good nutritional status, and 1 respondent had moderate income with low nutritional status. In contrast, 19 respondents had low income with good nutritional status, and 2 respondents had low income with poor nutritional status. Higher maternal and sufficient income still allows for the possibility of CED due to factors like infection, disease, maternal knowledge, maternal age, inter-pregnancy interval, and behavioral factors. This study aligns with Nursanti et al. (2005) at Puskesmas Cilincing, North Jakarta, showing no significant relationship between income and the risk of CED in pregnant women. This implies that even with low family income, sufficient knowledge about nutritious food leads to a balance between food intake and body's needs. Families with lower economic status usually allocate most of their income for food, while greater income allows for better food choices, aligning with nutritional needs (Saputri et al., 2014).

## **5. CONCLUSION**

This study has certain limitations that need to be taken into account when interpreting its findings. One significant limitation is that the measurement of maternal nutritional status relied solely on anthropometric measurements, particularly the Mid-Upper Arm Circumference (MUAC) measurement, which primarily assesses short-term nutritional status. Therefore, it's essential to consider that other dimensions of maternal nutritional status, such as daily nutrient intake and factors affecting long-term nutritional well-being, should also be considered in future research.

Based on the outcomes of this study conducted at the Ampel Health Center in Boyolali Regency, it can be deduced that a majority of respondents fall within the age range of 20-35 years, with a notable proportion of pregnant women in their third trimester. However, this study does not establish a significant correlation between maternal nutritional status and family income levels at the Ampel Health Center in Boyolali Regency. Consequently, for future investigations, it is recommended to broaden the assessment of maternal nutritional status by incorporating additional variables that might contribute to nutritional well-being and adopting a more diversified approach to assessing nutritional status. This is anticipated to offer a more comprehensive comprehension of the interplay between maternal nutritional status, family income, and other potential influencing elements.

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